

## AMENDMENTS TO THE CLAIMS

Claim 1 (**Previously Presented**) Thermosetting binder compositions for powder coatings comprising a linear or branched carboxylic acid group containing isophthalic acid rich polyester, a linear or branched hydroxyl group containing polyester having a hydroxyl number of at least 15 mg KOH/g and a curing agent system having functional groups reactive with the polyester carboxylic acid groups and the hydroxyl groups, wherein the carboxylic group containing isophthalic acid rich polyester is amorphous and the hydroxyl group containing polyester is semi-crystalline.

Claim 2 (**Previously Presented**) Binder compositions according to claim 1, wherein the curing agent system is composed of at least one curing agent having functional groups reactive with the polyester carboxylic acid groups and at least one curing agent having functional groups reactive with the polyester hydroxyl groups, and/or at least one curing agent having functional groups reactive with both the polyester carboxylic acid groups and the polyester hydroxyl groups.

Claim 3 (**Previously Presented**) Binder composition according to claim 1, wherein the carboxylic acid group containing amorphous polyester is composed of a dicarboxylic acid component comprising 50 to 100 mol percentage of isophthalic acid and from 0 to 50 mol percentage of another diacid selected from fumaric acid, maleic acid, phthalic anhydride, terephthalic acid, 1,4-cyclohexanedicarboxylic acid, 1,3-cyclohexanedicarboxylic acid, 1,2-cyclohexanedicarboxylic acid, succinic acid, adipic acid, glutaric acid, pimelic acid, suberic acid, azelaic acid, sebaciec acid, 1,12-dodecanedioic acid, etc., or the corresponding anhydrides, and of a glycol component comprising 70 to 100 mol percentage of neopentyl glycol and/or 2-butyl-2-ethyl - 1,3-propanediol and 0 to 30 mol percentage of another glycol selected from ethyleneglycol, propyleneglycol, 1,4-butanediol, 1,6-hexanediol, 1,4-cyclohexanediol, 1,4-cyclohexanedimethanol, 2-methyl 1,3-, hydrogenated Bisphenol A, hydroxypivalate of neopentyl glycol.

**Claim 4 (Previously Presented)** Binder composition according to claim 1 wherein the carboxylic acid group containing amorphous polyester is a branched polyester incorporating up to 15 mol percentage relative to isophthalic acid, of a polyacid such as trimellitic acid, pyromellitic acid, etc, or their corresponding anhydrides.

**Claim 5 (Previously Presented)** Binder composition according to claim 1 wherein the carboxylic acid group containing amorphous polyester is a branched polyester incorporating up to 15 mol percentage relative to neopentyl glycol and/or 2-butyl-2-ethyl-1,3-propanediol, of a polyol such as trimethylolpropane, ditrimethylolpropane, pentaerythrytol.

**Claim 6 (Previously Presented)** Binder composition according to claim 1 wherein the hydroxyl functionalized semi-crystalline polyester is composed of 75 - 100 mol percentage of terephthalic acid and/or 1,4-cyclohexanedicarboxylic acid and from 0 to 25 mol percentage of another diacid selected from fumaric acid, maleic acid, phthalic anhydride, isophthalic acid, terephthalic acid, 1,4 cyclohexanedicarboxylic acid, 1,3-cyclohexanedicarboxylic acid, 1,2-cyclohexanedicarboxylic acid, succinic acid, adipic acid, glutaric acid, pimelic acid, suberic acid, azealic acid, sebacic acid, 1,12-dodecanedioic acid, etc., and of a glycol component comprising from 75 to 100 mol percentage of an aliphatic non-branched diol selected from ethyleneglycol, 1,3-propanediol, 1,4-butanediol, 1,5-pantanediol, 1,6-hexanediol, 1,7-heptanediol, 1,8-octanediol, 1,9-nanediol, 1,10-decanediol, 1,4-tetradecanediol, 1,16-hexadecanediol, used in a mixture or alone, and 0 to 25 mol percentage of another glycol selected from propyleneglycol, neopentyl glycol, 2-methyl-1,3-propanediol, 2-butyl-2-ethyl-1,3-propanediol, hydrogenated Bisphenol A, hydroxypivalate of neopentyl glycol, 1,4-cyclohexanediol, 1,4-cyclohexanedimethanol.

**Claim 7 (Previously Presented)** Binder composition according to claim 1 wherein the hydroxyl functionalized semi-crystalline polyester is composed of 75 - 100 mol percentage of a

linear non-branched aliphatic diacid selected from succinic acid, adipic acid, glutaric acid, pimelic acid, suberic acid, azelaic acid, sebamic acid, 1,12-dodecanedioic acid, used in a mixture or alone, and from 0 to 25 mol percentage of another diacid selected from fumaric acid, maleic acid, phthalic anhydride, terephthalic acid, isophthalic acid, 1,2-cyclohexanedicarboxylic acid, 1,3-cyclohexanedicarboxylic acid, 1,4-cyclohexanedicarboxylic acid, etc., and of a glycol component comprising from 75 to 100 mol percentage of a cycloaliphatic diol such as 1,4-cyclohexanediol, 1,4-cyclohexanemethanol, hydrogenated Bisphenol A, used in a mixture or alone, or an aliphatic non-branched diol such as ethyleneglycol, 1,3-propanediol, 1,4-butanediol, 1,5-pantanediol, 1,6 hexanediol, 1,7-heptanediol, 1,8-octanediol, 1,9-nonanediol, 1,10-decanediol, 1,4-tetradecanediol, 1,16-hexadecanediol, used in a mixture or alone, and from 0 to 25 mol percentage of another glycol selected from propyleneglycol, neopentyl glycol, 2--methyl-1,3-, 2-butyl, 2-ethyl-1,3-propanediol, 1,4-cyclohexanediol, 1,4cyclohexanemethanol, hydrogenated Bisphenol A.

**Claim 8 (Previously Presented)** Binder composition according to claim 1 wherein the hydroxyl functionalized semi-crystalline polyester is a branched polyester incorporating up to 15 mol percentage based on the total of terephthalic acid, 1,4-cyclohexanedicarboxylic acid or non-branched aliphatic diacids, of a polyacid such as trimellitic acid, pyromellitic acid, etc., or their corresponding anhydrides.

**Claim 9 (Previously Presented)** Binder composition according to claim 1 wherein the hydroxyl functionalized semi-crystalline polyester is a branched polyester incorporating up to 15 mol percentage based on the total of aliphatic non-branched diols or cycloaliphatic diols, of a polyol such as trimethylolpropane, ditrimethylolpropane, pentaerythrytol.

**Claim 10 (Previously Presented)** Binder composition according to claim 1 wherein the hydroxyl functionalized semi-crystalline polyester is a branched polyester incorporating up to 30 mol percentage based on the total of terephthalic acid, 1,4-cyclohexanedicarboxylic acid or

non-branched aliphatic diacids and/or on the total of aliphatic non-branched diols or cycloaliphatic diols, of monofunctional carboxylic acids having at least two hydroxyl groups wherein one or more of the hydroxyl groups can be hydroxyalkyl substituted, selected from  $\alpha,\alpha$ -bis-(hydroxymethyl)-propionic acid(dimethylolpropionic acid),  $\alpha,\alpha$ -bis-(hydroxymethyl)-butyric acid,  $\alpha,\alpha,\alpha$ -tris(hydroxymethyl)-acetic acid,  $\alpha,\alpha$ -bis-(hydroxymethyl)-valeric acid,  $\alpha,\alpha$ -bis-(hydroxy)propionic acid or  $\alpha$ -phenylcarboxylic acids having at least two hydroxyl groups directly pendant to the phenyl ring (phenolic hydroxyl groups) such as 3,5-dihydroxybenzoic acid.

**Claim 11 (Previously Presented)** Binder composition according to claim 1 wherein the carboxylic acid group containing isophthalic acid rich amorphous polyester has:

- an acid number from 15 to 100 mg KOH/g and preferably from 30 to 70 mg KOH/g;
- a number averaged molecular weight ranging from 1100 to 15000;
- a glass transition temperature (Tg) from 40 to 80°C ; and
- an ICI (cone/plate) viscosity at 200°C ranging from 5 to 15000 mPa.s.

**Claim 12 (Previously Presented)** Binder composition according to claim 1 wherein the hydroxyl group containing semi-crystalline polyester has:

- an hydroxyl number from 10 to 100 mg KOH/g and preferably from 15 to 80 mg KOH/g;
- a number averaged molecular weight ranging from 1100 to 17000;
- a fusion zone from 50 to 150°C;
- a glass transition temperature (Tg) from -50 to 50°C;
- a degree of crystallinity of at least 5 J/g; and
- an ICI (cone/plate) viscosity at 175°C ranging from 5 to 10000 mPa.s.

**Claim 13 (Previously Presented)** Binder composition according to claim 1 wherein the thermosetting polyester blend is composed of:

- 55 to 95 parts by weight of the carboxylic acid group containing isophthalic acid rich amorphous polyester; and
- 45 to 5 parts by weight of the hydroxyl group containing semi-crystalline polyester.

**Claim 14 (Previously Presented)** Binder composition according to claim 1 wherein the curing agent having functional groups reactive with the carboxylic acid groups of the isophthalic acid rich amorphous polyester, is a polyepoxy compound or a  $\beta$ -hydroxyalkylamide containing compound.

**Claim 15 (Previously Presented)** Binder composition according to claim 1 wherein the curing agent having functional groups reactive with the hydroxyl groups of the semi-crystalline polyester, is a blocked polyisocyanate compound.

**Claim 16 (Previously Presented)** Binder composition according to claim 1 wherein the carboxylic acid group containing amorphous polyester comprises a catalyzing amount of thermosetting catalyst ranging from 0 to 5 weight percentage.

**Claim 17 (Previously Presented)** Binder composition according to claim 1 wherein the hydroxyl group containing semi-crystalline polyester comprises a catalyzing amount of thermosetting catalyst ranging from 0 to 5 weight percentage.

**Claim 18 (Previously Presented)** Binder composition according to claim 1 wherein the binder is substantially based on:

- 28 to 93 parts by weight of the carboxylic acid group containing isophthalic acid rich amorphous polyester
- 43 to 3 parts by weight of the hydroxyl group containing semi-crystalline polyester
- 1 to 45 parts by weight of a curing agent having functional groups being reactive with the carboxylic acid groups of the amorphous polyester

- 21.0 to 0.1 parts by weight of a curing agent having functional groups reactive with the hydroxyl groups of the semi-crystalline polyester.

Claim 19 (**Previously Presented**) Thermosetting powder composition containing:

- a binder composition according to claim 1
- UV-light absorbers and/or hindered amine light stabilizers
- flow control agent
- degassing agent.

Claim 20 (**Original**) Thermosetting powder composition according to claim 19 for use as a clear lacquer.

Claim 21 (**Original**) Thermosetting powder composition according to claim 19 containing pigments, dyes, fillers.

Claim 22 (**Previously Presented**) Entirely or partially coated substrate, wherein the coating material used, is a powder coating composition according to claim 19.

Claim 23 (**Previously Presented**) Binder composition according to claim 1 wherein the carboxylic acid group containing isophthalic acid rich amorphous polyester has:

- an acid number from 30 to 70 mg KOH/g;
- a number averaged molecular weight ranging from 1600 to 8500;
- a glass transition temperature (Tg) from 40 to 80°C ; and
- an ICI (cone/plate) viscosity at 200°C ranging from 5 to 15000 mPa.s.

Claim 24 (**Previously Presented**) Binder composition according to claim 1 wherein the hydroxyl group containing semi-crystalline polyester has:

- an hydroxyl number from 15 to 80 mg KOH/g;

- a number averaged molecular weight ranging 1400 to 11200;
- a fusion zone from 50 to 150 °C;
- a glass transition temperature (Tg) from -50 to 50 °C;
- a degree of crystallinity of at least 10J/g; and
- an ICI (cone/plate) viscosity at 175°C ranging from 5 to 10000 mPa.s.

**Claim 25 (Previously Presented)** Binder composition according to claim 1 wherein the thermosetting polyester blend is composed of:

- 70 to 90 parts by weight of the carboxylic acid group containing isophthalic acid rich amorphous polyester; and
- 30 to 10 parts by weight of the hydroxyl group containing semi-crystalline polyester.

**Claim 26 (Previously Presented)** Binder composition according to claim 1 wherein the binder is substantially based on:

- 43 to 86 parts by weight of the carboxylic acid group containing isophthalic acid rich amorphous polyester
- 29 to 7 parts by weight of the hydroxyl group containing semi-crystalline polyester
- 3 to 35 parts by weight of a curing agent having functional groups being reactive with the carboxylic acid groups of the amorphous polyester
- 9.0 to 0.5 parts by weight of a curing agent having functional groups reactive with the hydroxyl groups of the semi-crystalline polyester.

**Claim 27 (Currently Amended)** Thermosetting powder composition containing:

- a binder composition according to claim [[1]] 26
- UV-light absorbers and/or hindered amine light stabilizers
- flow control agent
- degassing agent.

Claim 28 (**Previously Presented**) Entirely or partially coated substrate, wherein the coating material used, is a powder coating composition according to claim 27.